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10/500,661	02/25/2005	Carsten Springhorn	10191/3611	2471

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KENYON & KENYON LLP
ONE BROADWAY
NEW YORK, NY 10004

EXAMINER	
BALL, JOHN C	
ART UNIT	PAPER NUMBER
1795	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/500,661	SPRINGHORN ET AL.	
	Examiner	Art Unit	
	J. CHRISTOPHER BALL	1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 October 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *11-15 and 17-22* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *11-15 and 17-22* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *11/03/2008*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Summary

1. This Office Action based on the Amendment filed with the Office on October 14, 2008, regarding the SPRINGHORN et al. application.

2. Claims 11-15 and 17-22 are currently pending and have been fully considered.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. Claims 11-15, 17-19, and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over IMAMURA et al. (US 6,338,782 B1) in view of DUCE et al. (International Publication WO 01/29546 A2), submitted to the Office on an information disclosure statement.

Regarding claims 11 and 21, IMAMURA et al. discloses a gas sensor usable for measurement of an exhaust gas (Col. 1, lines 5-10), comprising: a measuring device configured to detect a physical property of the gas, in the form of a measurement gas chamber (Col. 4, lines 5-10); a heating device including a heater (50, Figure 4), which is electrically connected to a first heater supply lead (552, Figure 4) and a second heater supply lead (551, Figure 4); wherein the first heater supply lead is arranged in a plane of stratification between the second heater supply lead and the measuring device (10, Figure 4) and the first heater supply lead is at an at least constant electrical potential, in the form of "a low-voltage" (Col. 5, lines 60-61).

IMAMURA et al. does not teach a heater supply lead at least covers a full surface of the sensor element in at least one of a supply region and a region of the heater.

However, DUCE et al. teaches that electrolyte layers or protective layers can comprise an entire layer or any portion thereof; e.g., they can form the layer, be attached to the layer, or disposed an opening in the layer (p. 9, lines 10-15).

At the time of the present invention, it would have been obvious to one of ordinary skill that the teaching of DUCE et al. with regard to the electrolyte layers or protective layers can be extended to a heater supply lead as taught by IMAMURA et al., such that a heat supply lead can comprise an entire layer or any portion thereof; e.g., they can form the layer, be attached to the layer, or disposed an opening in the layer, because it would allow the heat supply lead to be screen printed, which is advantageous in terms of manufacturing time since other layers are produced in this manner. Additionally, if the heat supply lead comprises an entire layer, it would by default inherently have a perpendicular projection onto the stratification of the other heater supply lead to lie at least regionally on the other heater supply lead.

Regarding claim 12, IMAMURA et al. teaches an insulation layer, the first heater supply lead being insulated from the second supply lead by the first insulation layer (51, Figure 4); wherein the heater has a contact point (unnumbered oval, Figures 11-17) via which the heater is electrically connected to the second heater supply lead, the first insulation layer having a recess in the region of the contact point (Col. 5, lines 57-59; 510, Figure 5).

Regarding claim 13, IMAMURA et al. teaches a carrier foil (81, Figure 8), at least one of the heater and the second heater supply lead being electrically

insulated from the carrier foil by an insulation layer (82, Figure 8); wherein at least one of the heater and the first heater supply lead is electrically insulated from the measuring device by another insulating layer (84, Figure 8; Col. 9, line 57 – Col. 10, line 29).

Regarding claim 14, IMAMURA et al. teaches the limitations of claim 11, as outlined in the above rejection. IMAMURA et al. also teaches that the heater and heater supply leads were formed by screen printing (Col. 8, lines 63-67).

IMAMURA et al. does not explicitly teach that the insulation layers are formed by screen printing.

However, DUCE et al. disclose a gas sensor, wherein is taught that the insulating layers of the device can be formed by a number of techniques, including screen printing (p. 7, lines 19-25).

At the time of the present invention, it would have been obvious to one of ordinary skill in the art to utilize the screen printing process applied to form the heater and heater supply leads, taught by IMAMURA et al., to additionally form the insulation layers, as taught by DUCE et al., because better compatibility results between the components when they are manufactured in the same manner.

Regarding claim 15, IMAMURA et al. teaches an insulation foil (51, Figure 4) being arranged between the first heater supply lead (552, Figure 4) and the

second heater supply lead (551, Figure 4), wherein the heater is electrically connected to the first heater supply lead via a through-hole (510, Figure 5). The walls of the through-hole taught by INAMURA et al. would inherently have to be coated with a conductive material for the invention of INAMURA et al. to operate correctly.

Regarding claim 17 and 18, IMAMURA et al. teaches that the a heater supply lead is at a constant potential, in this case ground (Col. 6, lines 11-12), and to heat the sensor element, a potential of the other heater supply lead is configured to be modified by electrical circuit elements arranged outside of the sensor element, in the form a heater power supply (Col. 6, lines 12-20).

Regarding claim 19, IMAMURA et al. teaches the measuring device includes at least one electrochemical cell having a first electrode (21, Figure 2), a second electrode (22, Figure 2) and a solid electrolyte, the solid electrolyte electrically connecting the first electrode and second electrode (13, Figure 2; Col. 4, lines 11-16).

6. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over IMAMURA et al. (US 6,338,782 B1) in view of MURASE et al. (US 4,882,947).

IMAMURA et al. teaches the limitations of claim 11, as outlined in the above rejection.

IMAMURA et al. does not teach where at least one of the first and second heater supply leads has a lattice structure.

MURASE et al. discloses a resistive heater for use with a gas sensor, wherein is taught that heat-generating conductors can form a grid or lattice (Col. 3, lines 11-18) and leads (8, Figure 1 & 3a-e).

At the time of the present invention, it would have been obvious to one of ordinary skill in the art to make the leads taught in MURASE et al. in a lattice form like the conductors also taught in MURASE et al. to be incorporated in the device as taught by IMAMURA et al. because it the lattice form would allow little heat to migrate down the leads, to where they are connected to an external device or circuit (MURASE et al., Col. 11, lines11-21).

7. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over IMAMURA et al. (US 6,338,782 B1) in view of WAHL et al. (US 2002/0175077 A1).

IMAMURA et al. discloses a gas sensor usable for measurement of an exhaust gas (Col. 1, lines 5-10), comprising: a measuring device configured to detect a physical property of the gas, in the form of a measurement gas chamber

(Col. 4, lines 5-10); a heating device including a heater (50, Figure 4), which is electrically connected to a first heater supply lead (552, Figure 4) and a second heater supply lead (551, Figure 4); wherein the first heater supply lead is arranged in a plane of stratification between the second heater supply lead and the measuring device (10, Figure 4) and the first heater supply lead is at an at least constant electrical potential, in the form of "a low-voltage" (Col. 5, lines 60-61).

IMAMURA does not explicitly disclose the heater is energized and de-energized by the change in potential of the second heater supply lead to adjust a predetermined temperature of the measuring device. Such an operation is noted as common in the art as the operation of the type of gas sensors described in the prior art and instant application are known to operate more efficiently at a particular temperature.

However, WAHL discloses a gas sensor, wherein it is taught that the heater is regulated by being switched on or off (paragraph [0004]), this being performed by changing the voltage applied at a second contact surface (paragraph [0024]).

At the time of the present invention, it would have been obvious to one of ordinary skill in the art to modify the operation of the device disclosed by IMAMURA with the control of the heater as taught by WAHL because the control of the temperature of the gas sensor make operation of the sensor more effective (IMAMURA, Col. 3, lines 59-61).

Response to Arguments

8. Applicant's arguments with respect to claims 11-15 and 17-22 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to J. CHRISTOPHER BALL whose telephone

number is (571)270-5119. The examiner can normally be reached on Monday through Thursday, 8:00 am to 5:00 pm (EDT).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on (571) 272-1342. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JCB
AU 1795
01/01/2009

/Alex Noguerola/
Primary Examiner, Art Unit 1795
January 5, 2009